

Contents

1 Routine/Function Prologues	2
1.0.1 elevadjust.F90 (Source File: elevadjust.F90)	2

1 Routine/Function Prologues

1.0.1 elevadjust.F90 (Source File: elevadjust.F90)

Corrects Temperature, Pressure, Humidity and Longwave Radiation values for differences in elevation between EDAS and LDAS grids.

REVISION HISTORY:

```

11 Apr 2000: Brian Cosgrove; Initial Code
12 May 2000: Brian Cosgrove; Corrected for zero humidities
09 Aug 2000: Brian Cosgrove; Corrected program so that
             it only performs calculations if both
             the elevation difference file and the forcing
             data file (use temperature data as check for all
             fields) contain defined values
25 Jan 2001: Matt Rodell; Compute number of input and output
grid points, use to allocate local arrays
27 Feb 2001: Brian Cosgrove; Added statement to check for use of
             catchment data so that correct elevation correction
             files is used
15 Mar 2001: Jon Gottschalck; if-then to handle negative vapor
pressures in long wave correction
15 Mar 2001: Matt Rodell; merge NLDAS and GLDAS versions
14 Nov 2003: Sujay Kumar; Adopted in LIS

```

INTERFACE:

```

subroutine elevadjust(t,f,fforce,force_tmp,force_hum,force_lwd, &
                     force_prs)

```

USES:

```

use lisdrv_module, only: tile
implicit none

```

INPUT PARAMETERS:

```

integer, intent(in) :: f, t

```

OUTPUT PARAMETERS:

```

real, intent(inout) :: fforce,force_tmp,force_hum,&
                     force_lwd,force_prs

```

CONTENTS:

```

grav = 9.81
rdry = 287.
lapse = -0.0065
tcforce=force_tmp+(lapse*tile(t)%elev)
tbar=(force_tmp+tcforce)/2.
pcforce=force_prs/(exp((grav*tile(t)%elev)/(rdry*tbar)))

```

```
if (force_hum .eq. 0) force_hum=1e-08
ee=(force_hum*force_prs)/0.622
esat=611.2*(exp((17.67*(force_tmp-273.15))/&
((force_tmp-273.15)+243.5)))
qsat=(0.622*esat)/(force_prs-(0.378*esat))
rh=(force_hum/qsat)*100.
fesat=611.2*(exp((17.67*(tcforce-273.15))/ &
((tcforce-273.15)+243.5)))
fqsat=(0.622*fesat)/(pcforce-(0.378*fesat))
hcforce=(rh*fqsat)/100.
fe=(hcforce*pcforce)/0.622
mee=ee/100.
mfe=fe/100.

!-----
! correct for negative vapor pressure at very low temperatures at
! high latitudes
!-----

if (mee .le. 0) mee = 1e-08
if (mfe .le. 0) mfe = 1e-08
emiss =1.08*(1-exp(-mee**(force_tmp/bb)))
femiss =1.08*(1-exp(-mfe**(tcforce/bb)))
ratio=(femiss*(tcforce**4))/(emiss*(force_tmp**4))
lcforce=force_lwd*ratio

select case (f)
case(1)
    fforce=tcforce
case(2)
    fforce=hcforce
case(4)
    fforce=lcforce
case(7)
    fforce=pcforce
case default
    print*, "not a valid forcing type for elevation adjustment"
    call endrun
end select
return
```